REMARKS

Upon entry of the foregoing amendment, Claims 1-4, 8-12, 18-21, 23-37 and 40-52 are pending in the application, with Claims 1, 12, 23, 32, 47 and 50 being independent claims.

The Cited References Do Not, Either Singularly, or in Combination Describe Adaptive Processing Based on Quality of Service Requirements and/or Link Quality

The invention claimed by independent Claims 1, 12, 23, 32, 47 and 50 adaptively processes data by converting the data from a protocol specific format to a protocol independent format, modifying the payload length of a data packet and/or applying forward error correction ("FEC") based on the quality of service ("QoS") requirements and/or the quality of the link associated with the data. The adaptive processing accommodates changes in the QoS and/or the link quality so that the protocol independent format, the payload length and/or the type of FEC dynamically changes as the QoS and/or link quality changes. In addition, once the type of FEC is changed, the length of the FEC is modified based on the QoS requirements or the link quality.

Claim 1 requires adaptively converting the format and modifying the type of FEC based upon the QoS requirements. Claim 12 requires adaptively converting the format, modifying the payload length and modifying the type of FEC based on the QoS requirements and the link quality. Claim 23 requires adaptively modifying the payload length based on the link quality. Claim 32 requires adaptively modifying the payload length and modifying the type of FEC based on the QoS requirements. Claim 47 requires adaptively modifying the type of FEC based on QoS and link quality and Claim 50 requires adaptively converting the format and modifying the payload length based on

the QoS and link Q. For example, Claim 1 recites that the first protocol converter "converts each of the separated datastreams into a protocol independent format based on the quality of service requirements" and the first error control module "encodes the data by applying forward error correction (FEC) to the separated data based on the quality of service requirements so that data associated with a first quality of service requirement is encoded using a first type of FEC and data associated with a second quality of service requirement is encoded using a second type of FEC."

The Cited References Do Not, Either Singularly, or in Combination Describe Adaptive FEC Based on QoS

The primary reference relied upon by the Examiner in rejecting the claims is U.S. Pat. No. 5,936,949 to *Pasternak et al.* ("*Pasternak*"). *Pasternak* describes an ATM system that uses TDMA for upstream communication and TDM for downstream communication. Column 2, lines 10-13. The Examiner alleged that *Pasternak* describes "varying the FEC." The section cited by the Examiner describes that different numbers of bits can be used for error control and that there is a tradeoff between error correction and throughput. The Examiner admitted that *Pasternak* does not disclose varying the FEC based on the QoS requirements.

However, the Examiner alleged that U.S. Pat. No. 6,587,457 to *Mikkonen* ("*Mikkonen*") describes varying the FEC based on QoS. *Mikkonen* describes a system that supports wireless Internet connections using a flow label (IPTAG). The flow label is added to the IP Flow and a switching table is used to associate the IP flow label with its respective radio flow label. In one embodiment the IP flow label is added to the header of an IP packet. Column 7, lines 28- 36. *Mikkonen* describes that wireless connections can be grouped together and that different levels of QoS can be attained for the

different groups of connections using differing error correction codes. In contrast, Claims 1, 12, 32 and 47 recite that different types of FEC are used based on the QoS requirements for different datastreams. *Mikkonen* does not describe using different types of FEC based on the QoS requirements for different datastreams, it only describes using different types of FEC based on different connections. Moreover, Mikkonen does not describe the adaptive FEC recited by the claims since Mikkonen does not describe that the type of FEC applied changes as the QoS requirements change.

The Examiner alleged that it would have been obvious to combine *Pasternak* and *Mikkonen* to vary the FEC based on QoS because this would improve efficiency of the wireless data link. *Pasternak* is directed to providing a point-to-multipoint wireless network that operates at microwave frequencies and supports cost-effective radio terminals (Column 2, lines 4) and describes a system where upstream and downstream transmissions are handled differently. *Mikkonen* is directed to connecting a radio flow and an IP flow (Column 4, lines 56-58) and describes adding a flow label to the header of a packet. The references are directed to solving different problems and use different techniques. Therefore, there is no motivation to combine the references.

In addition, there is no suggestion in *Pasternak* or *Mikkonen* that the flow label described by *Mikkonen* could be used in either the upstream or downstream transmission described by *Pasternak*. The mere fact that the references both refer to error correction does not provide a teaching for combining the two references. Thus, there is no motivation to combine the references in the manner suggested by the Examiner.

Even if the references are combined, the combination does not describe applying FEC based on the QoS requirements of the datastreams, as recited by the independent claims. *Mikkonen* only describes applying

different types of error correction based on the connection. *Mikkonen* does not describe adaptively applying different types of error correction based on the QoS requirements of the datastream, as recited by Claims 1, 12, 32 and 47.

The Cited References Do Not, Either Singularly, or in Combination Describe Adaptive FEC Based on Link Quality

The Examiner admitted that *Pasternak* does not describe varying the FEC applied to a particular datastream based on the quality of the data link. However, the Examiner alleged that U.S. Pat. No. 5,600,663 to *Ayanoglu et al.* ("*Ayanoglu*") describes varying error correction based on error rates detected in a link. *Ayanoglu* describes that the number of parity data symbols (bits, bytes or packets) are changed based on previous error patterns. Column 1, line 65 – Column 2, line 3. For example, if the number of errors in a received datastream exceeds a threshold, then the number of bits used for error correction is increased. Conversely, if there has been a long period of error-free transmission, then the number of bits used for error correction is decreased. Column 4, lines 5-18.

In contrast, the invention recited in Claims 12, 29, 42, 47 and 51 requires that different types of error correction are applied based upon the quality of the link associated with a particular datastream. *Ayanoglu* only describes that the number of parity bits, bytes or packets is varied based on the error rates in the link. *Ayanoglu* does not describe that the type of error correction is changed based on the quality of the link. The invention recited by Claim 52 varies both the type and length of the FEC. Although *Ayanoglu* describes varying the length of the FEC, it does not describe varying both the type and length, as recited by Claim 52.

The Examiner alleged that it would have been obvious to combine *Pasternak* and *Ayanoglu* to increase throughput while maintaining quality. *Pasternak* describes a modified trellis code modulation ("TCM") for use on upstream transmissions. The TCM code is punctured by replacing some of the code bits with data bits. Column 7, lines 16-22. There is no teaching in either *Pasternak* or *Ayanoglu* of how the modified TCM code described by *Pasternak* could be further modified by the method described by *Ayanoglu*. Thus, there is no motivation to combine the references in the manner suggested by the Examiner.

The Cited References Do Not, Either Singularly, or in Combination Describe Modifying the Payload Length Based on the QoS and/or Link Quality

Independent Claim 23 recites modifying a payload length of the automatic retransmit request packet data units ("ARQ-PDUs") based on the quality of the data link assigned to carry the selected data transmission. The Examiner alleged that modifying the payload length of the ARQ-PDUs is described by U.S. Pat. No. 5,050,161 to *Golestani* ("*Golestani*"). The Examiner also alleged that U.S. Pat. No. 6,289,485 to *Shiomoto* ("*Shiomoto*") describes a relationship between packet length and link quality and that it would have been obvious to combine *Pasternak*, *Golestani* and *Shiomoto* to increase the link quality.

The cited section of *Golestani* states that multiple frame types with multiple frame durations are used to address framing congestion. Frames are defined as time intervals (Column 2, lines 26-31) and are distinct from packets (Fig. 2A and Column 6, lines 54-56). Although *Golestani* describes different frame durations, it does not describe modifying the payload length of a packet.

The cited section of *Shiomoto* describes that error codes of different lengths are added to a fixed length of input data resulting in different packet lengths for the coded data. The length of the error code is determined by the "significance of the input data." *Shiomoto* does not describe that the length of the payload is modified based on the quality of the data link, as recited by Claim 23.

There is no motivation to combine the references in the manner suggested by the Examiner. There is no teaching of how the frame types and frame durations described by *Golestani* or the error codes described by *Shiomoto* could be used with the system described by *Pasternak*. Moreover, there is no suggestion that the combination would affect the quality of the data link. *Shiomoto* actually teaches away from improving the quality of the data link since the error codes are used to address the problem of a poor quality data link. Even if the references are combined, the combination does not describe modifying the payload length based on the quality of the data link, as recited by Claims 9, 12, 23, 32, 45, 46 and 50.

Pasternak Does Not Describe Converting Data into a Protocol Independent Format Based on the QoS and/or Link Quality

Claims 1, 10, 12, and 50 recite converting data or packets from a protocol specific format to a protocol independent format. Although the Examiner alleged that *Pasternak* describes converting packets to a generic format, the cited section of *Pasternak* actually states that ATM cells are converted to "whatever format the carrier network requires, such as ATM, Frame Relay or Narrow Band ISDN." *Pasternak* describes format conversion between specific protocols to meet the requirements of a destination network. Although Pasternak describes conversion between protocols, it does not describe conversion to a protocol independent format. Nor does it describe

transmitting data using a protocol independent format. Thus, *Pasternak* does not describe the invention of Claim 1, 10, 12 and 50.

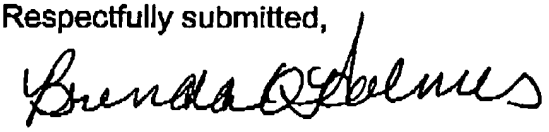
REQUEST FOR TELEPHONE INTERVIEW

The undersigned attorney will contact the Examiner within the next few weeks to schedule a time for an interview. Should the Examiner be ready to examine this application before speaking with the undersigned attorney, the Examiner is respectfully requested to contact the attorney and wait until after the interview is completed before further examining this application.

CONCLUSION

In light of the foregoing, it is respectfully submitted that the pending claims are allowable and a notice of allowance is respectfully requested. If there are any issues that can be resolved via a telephone conference, the Examiner is invited to contact Brenda Holmes at 404.685.6799.

Respectfully submitted,



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